

PATENT COOPERATION TREATY

PCT/US2005/010923

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OCT 20 2006

From the INTERNATIONAL BUREAU

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NOTIFICATION CONCERNING THE TRANSMITTAL OF COPY OF INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (CHAPTER I OF THE PATENT COOPERATION TREATY)
(PCT Rule 44bis.1(c))

To:

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45782
OCT 20 2006

NO DOCKETING REQUIRED

IMPORTANT NOTICE

Date of mailing (day/month/year)
12 October 2006 (12.10.2006)

Applicant's or agent's file reference
P18305PCT

International application No.
PCT/US2005/010923

International filing date (day/month/year)
31 March 2005 (31.03.2005)

Priority date (day/month/year)
31 March 2004 (31.03.2004)

Applicant
INTEL CORPORATION et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO
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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference P18305PCT	FOR FURTHER ACTION	See item 4 below
International application No. PCT/US2005/010923	International filing date (<i>day/month/year</i>) 31 March 2005 (31.03.2005)	Priority date (<i>day/month/year</i>) 31 March 2004 (31.03.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant INTEL CORPORATION		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 04 October 2006 (04.10.2006)
Facsimile No. +41 22 338 82 70	Authorized officer <div style="text-align: center; font-weight: bold;">Simin Baharlou</div> e-mail: pt09@wipo.int

PATENT COOPERATION TREATY

REC'D 03 AUG 2005

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From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2005/010923

International filing date (day/month/year)
31.03.2005

Priority date (day/month/year)
31.03.2004

International Patent Classification (IPC) or both national classification and IPC
G06F9/46

Applicant
INTEL CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2005/010923

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2005/010923

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-20
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-20
Industrial applicability (IA)	Yes: Claims	1-20
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

1. Reference is made to the following document:

D1: EP-A-0 602 359 (INTERNATIONAL BUSINESS MACHINES CORPORATION;
IBM) 22 June 1994 (1994-06-22)

2. The present application does not meet the requirements of Article 33(1) PCT, because the subject-matter of claims 1-20 does not involve an inventive step in the sense of Article 33(3) PCT.

- 2.1 Document D1 discloses the following subject-matter of claim 1 :

Performing thread creation in hardware, without intervention of the operating system (page 4, lines 15,16). Creating and executing threads concurrently, which communicate and synchronize without passing via the memory (page 3, lines 55,56, page 5, lines 15,16 (identifies the problem), page 6, lines 31-33, page 7, lines 25-27). The threads disclosed in D1 therefore correspond to the threads of claim 1.

The subject-matter of claim 1 differs from D1, in that in claim 1, creation and execution of a thread is performed by non-privileged instructions.

The problem to be solved by the present invention may therefore be regarded as : how to implement the system of D1 at instruction-level.

Since it is clearly the purpose of the system disclosed in D1 to implement the system with as little intervention of the operating system as possible (page 4, lines 14-16, page 6, lines 31-33), it would be a straightforward possibility for the skilled person to use non-privileged instructions, thereby arriving at the solution of claim 1.

As a consequence, the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.

For the same reasons, the subject-matter of corresponding claims 11,17 does not involve an inventive step in the sense of Article 33(3) PCT.

- 2.2 The subject-matter of dependent claims 2,3,14 does not involve an inventive step, since it is commonly known for threads to share state, for example when threads belong to the same process.
- 2.3 The subject-matter of dependent claims 4,19 does not involve an inventive step, since it would be obvious that if threads can be created via non-privileged instructions, they can also be destroyed via such instructions.
- 2.4 The subject-matter of dependent claims 5-7,12,13 does not involve an inventive step, since D1 discloses threads communicating, via shared registers (page 17, lines 29-30) and via signaling instructions (page 14, lines 46-51).
- 2.5 The subject-matter of dependent claims 8,9,15,16,18, does not involve an inventive step, since their features concern trivial implementation details of a scheduling system, such as the one disclosed in D1.
- 2.6 The subject-matter of dependent claim 10 does not involve an inventive step, since D1 discloses (see for example page 24, lines 21-24) that exceptions are handled via the same mechanism as for the scheduling of threads (without intervention of the operating system).
- 2.7 The subject-matter of dependent claim 20 does not involve an inventive step, since mechanisms by which subtasks are associated with the same task are commonly known : it is for example well-known that several threads can be associated with one and the same process.